

## PATENT COOPERATION TREATY

PCT

10/540695

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 16-589 PCT	FOR FURTHER ACTION		See item 4 below
International application No. PCT/US2005/003758	International filing date (day/month/year) 04 February 2005 (04.02.2005)	Priority date (day/month/year) 05 February 2004 (05.02.2004)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant BECKETT GAS, INC.			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report   |
| <input type="checkbox"/> Box No. II           | Priority  |
| <input type="checkbox"/> Box No. III          | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/> Box No. IV           | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI           | Certain documents cited   |
| <input type="checkbox"/> Box No. VII          | Certain defects in the international application  |
| <input type="checkbox"/> Box No. VIII         | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

Date of issuance of this report 07 August 2006 (07.08.2006)	
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 338 82 70	Authorized officer  Dorothee Mülhausen  e-mail: pt01@wipo.int

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
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## PCT

REC'D 25 JUL 2005

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference <b>16-589 PCT</b>		Date of mailing (day/month/year) <b>22 JUL 2005</b> <b>FOR FURTHER ACTION</b> See paragraph 2 below
International application No. <b>PCT/US05/03758</b>	International filing date (day/month/year) <b>04 February 2005 (04.02.2005)</b>	Priority date (day/month/year) <b>05 February 2004 (05.02.2004)</b>
International Patent Classification (IPC) or both national classification and IPC <b>IPC(7): F23D 14/62, 14/14; F22B 5/00 and US Cl.: 431/354, 329; 122/17.1</b>		
Applicant <b>BECKETT GAS, INC.</b>		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

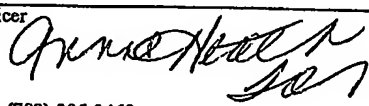
### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Josiah Cocks  Telephone No. (703) 305-3463
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Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US05/03758

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US05/03758

**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims <u>1-14, 20-26, and 34-45</u>	YES
	Claims <u>15-19 and 27-33</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-45</u>	NO
Industrial applicability (IA)	Claims <u>1-45</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and explanations:**

Claims 1-14 and 20-26 lack an inventive step under PCT Article 33(3) as being obvious over U.S. Patent No. 5,520,536 to Rodgers et al. ("Rodgers") in view of U.S. Patent No. 6,036,480 to Hughes et al. ("Hughes").

Rodgers discloses in Figures 1-7 a gas burner similar to recited in applicant's claims 1-14. In particular, Rodgers shows a gas burner for use in a water heater (see col. 1, lines 11-12) having a burner body, a lower housing (20), an element defining a combustion surface in the form of a woven screen (60), a diffuser/reflector (54 or 30) below the element (see Fig. 2), and an inlet conduit (14) through which a gas/air mixture is delivered to the burner body. The diffuser/reflector include a plurality of openings (see Figs. 2 and 4).

Rodgers does not show that the openings include an overhanging guide plate.

Hughes teaches a burner for a water heater in the same field of endeavor as Rodgers. In Hughes, the burner includes a diffuser-type portion that includes a plurality of openings (274 and 280). The openings also include overhanging guide vanes (276 and 284) that function to swirl gas/air flows to promote uniform combustion (see col. 9, lines 21-48).

Therefore, in regard to claims 1-14 and 20-26, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the burner of Rodgers to incorporate the overhanging guide vanes of Hughes for the desirable purpose of promoting uniform combustion.

Claims 15-19 and 27-33 lack novelty under PCT Article 33(2) as being anticipated by U.S. Patent No. 6,439,171 to McCall ("McCall").

McCall discloses in Figures 1-7 a gas burner for a water heater as described in applicant's claims 15-19 and 27-33. In particular, McCall shows a gas burner (28) with burner body, inlet conduit (24), and the bulkhead/access door and inlet end structure as recited (see at least Figs. 2-4).

Claims 34-45 lack an inventive step under PCT Article 33(3) as being obvious over McCall as applied to the claims above in view of U.S. Patent No. 4,793,800 to Vallett et al. ("Vallett").

McCall discloses all the limitations of claims 34-45 except that the gas burner includes an air scoop structure.

Vallett teaches a gas burner for a water heater in the same field of endeavor as McCall. In Vallett, it is demonstrated that it is understood in the art that such a gas burner may be arranged to include an air scoop structure (122, see Fig. 5).

Therefore, in regard to claims 34-45 it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the burner of McCall to be configured to incorporate the air scoop of Vallett as such a structure is recognized to desirable provide additional air for combustion (see Vallett, col. 7, lines 8-39).

Claims 1-45 the criteria set out in PCT Article 33(4), and thus meet industrial applicability because the subject matter claimed can be made or used in industry.